



Application No.: 10/717,916

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and the expansion chamber, and/or pressure equalization in the compression chamber and the expansion chamber, and [[or]] differential pressure adjustment of the gas pressures in the chambers compression chamber and the expansion chamber;

a second means for loading the spring with gas and maintaining gas pressure in the spring; and

a third means for relieving air when gas pressure in the compression chamber or the expansion chamber rises over a predetermined value.

2. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 1, wherein the said predetermined position, here called the first position, is situated at a relatively short offset distance from the a fully expanded position of the gas-filled spring.

3. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 2, wherein, in the first said predetermined position, the gas pressure in the chambers compression chamber and the expansion chamber is relatively low compared to the a maximum pressure of the chambers compression chamber and the expansion chamber occurring in the functioning of the gas-filled spring.

4. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 1, wherein, in a force-stroke curve produced by the gas, gentle curve transitions are executed throughout the a stroke length range of the piston.

5. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 1, wherein the expansion chamber is connected to or comprises a non-return valve function assembly forming part of the arrangement and designed to deliver gas to the expansion chamber if the pressure in the expansion chamber is less than the atmospheric pressure or the a feed pressure of the gas-filled spring.

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6. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 5, wherein the non-return valve ~~function~~ assembly connects to ~~the~~ a surrounding atmosphere or atmospheric pressure if the gas volume or gas pressure is too low in the expansion chamber.

7. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 6, wherein the non-return valve ~~function~~ assembly connects to a gas volume or gas pressure-boosting element forming part of the arrangement if the gas volume or gas pressure is too low in the expansion chamber.

8. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 1, wherein, in said ~~open~~ predetermined position~~[[s]]~~, gas can be discharged via a pressure-relief valve ~~function~~ assembly, should ~~the~~ gas pressure have risen in one or both of the ~~chambers~~ compression chamber and the expansion chamber due to an increase in temperature.

9. (Currently Amended) ~~Gas-filled~~ A gas-filled spring according to Claim 1, wherein the arrangement comprises an adjusting element designed to produce an external adjustment of at least one of the gas volume and~~[[or]]~~ gas pressure in one or both of the ~~chambers~~ compression chamber and the expansion chamber.

10. (Canceled)

11. (Withdrawn) Valve forming part of a gas-filled spring that operates using gas and comprises a cylinder and a piston, that operates in the internal space of the former and divides the internal space into a compression chamber and an expansion chamber, wherein the gas in the chambers is subject to changes in volume and/or pressure, wherein the valve is designed, in a predetermined or set position of the cylinder and the piston relative to one another, to effect an exceptionally rapid gas discharge or pressure adjustment which counteracts said changes.

12. (Withdrawn) Valve according to Claim 11, wherein the valve comprises a spring-loaded piston, which, as a function of its longitudinal displacement, keeps a duct for the discharge of gas

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open or closed, and wherein said piston is arranged with or on diaphragms each designed to seal off a space in the valve and to afford the piston a suspension which is on the one hand laterally rigid and on the other pliable in the longitudinal direction of the piston.

13. (Withdrawn) Valve according to Claim 11, wherein the piston in said duct is provided with a seal arranged in a protected position.

14. (Withdrawn) Valve according to Claim 11, wherein a spring function producing the spring loading is adjustable or replaceable for setting of the desired regulating position.

15. (New) The gas-filled spring of claim 1, wherein said third means is connected to said at least one passage and wherein gas is relieved via said third means only when said piston passes said predetermined position.

16. (New) A gas-filled spring for a vehicle, said gas-filled spring operating using gas, wherein said gas-filled spring comprises:

a cylinder; and

at least one piston that operates therein and divides an internal space of the cylinder into a compression chamber and an expansion chamber;

a self-pumping and self-balancing arrangement designed to ensure maintenance of necessary quantities of gas as well as gas pressure settings or differential pressures in the compression chamber and the expansion chamber in order to provide optimal spring function despite any gas leakage occurring and despite temperature variations occurring inside and outside the gas-filled spring, wherein the arrangement comprises:

a first means for transferring gas between said compression chamber and said expansion chamber, said first means comprising at least one passage which is arranged between the compression chamber and the expansion chamber and is

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open in a predetermined position of the cylinder and the piston relative to one another, wherein, each time the piston passes said predetermined position during movement of the piston in the internal space, the at least one passage is thereby opened and permits at least one of the following: gas transfer between the compression chamber and the expansion chamber, pressure equalization in the compression chamber and the expansion chamber, and differential pressure adjustment of gas pressures in the compression chamber and the expansion chamber;

a second means for loading the spring with gas and maintaining gas pressure in the spring; and

a third means for relieving gas when gas pressure in the compression chamber or the expansion chamber rises over a predetermined value, wherein said third means is connected to said at least one passage, and wherein gas is relieved via said third means only when said piston passes said predetermined position.